Homework Review

12) p 205 Quad Function

zeros 1 and -3

passes through (2, 10)

Write in Vertex Form

3) Factored $f(x) = a(x-s)(x-t)$

$10 = a(2-1)(2+3)$

$10 = a(1)(5)$

$\frac{10}{5} = \frac{5a}{5}$

$a = 2$

3) Factored $f(x) = a(x-s)(x-t)$

$f(x) = 2(x-1)(x+3)$

$\frac{s+t}{2}$

$= \frac{1+-3}{2}$

$= \frac{-2}{2}$

$= -1$

$f(x) = 2(-1-1)(-1+3)$

$f(x) = 2(-2)(+2)$

$f(x) = -8$

(h, k)

$(-1, -8)$

$f(x) = a(x-h)^2 + k$

$f(x) = 2(x+1)^2 - 8$

$y = a(x-h)^2 + k$

Oct 20-9:32 AM

Functions 3 Forms

1) Standard $ax^2 + bx + c = 0$

2) Vertex $f(x) = a(x-h)^2 + k$

3) Factored $f(x) = a(x-s)(x-t)$

Standard to Vertex Form

Completing the Square

Mar 26-12:34 PM

$(a+b)^2 = a^2 + 2ab + b^2$

$(a+b)(a+b)$ last term is a perfect square

middle term is $2ab$

ie

$(x+9)^2 \Rightarrow x^2 + 18x + 81$

$(x-3)^2 \Rightarrow x^2 - 6x + 9$

$(2x+5)^2 \Rightarrow 4x^2 + 20x + 25$

$(x+4)^2 \Rightarrow x^2 + 8x + 16$

$(3x-6)^2 \Rightarrow 9x^2 - 36x + 36$

Mar 26-12:46 PM

a) $f(x) = x^2 + 8x - 9$ $\left(\frac{b}{2}\right)^2$ $ax^2 + bx + c$

$f(x) = x^2 + 8x + 16 - 16 - 9$

$f(x) = (x+4)^2 - 16 - 9$

$f(x) = (x+4)^2 - 25$

$(-4, -25)$ $a = +1$

h K

half it

Square it

add it on

take it off

Mar 26-12:51 PM

$f(x) = x^2 - 6x - 14$ $\left(\frac{6}{2}\right)^2$

$(3)^2$

$= 9$

$f(x) = x^2 - 6x + 9 - 9 - 14$

$f(x) = (x-3)^2 - 9 - 14$

$f(x) = (x-3)^2 - 23$

$(3, -23)$ $a = +1$

h K

Mar 26-12:56 PM

$f(x) = x^2 - 4x + 9$

$\frac{4}{2}^2$

$= 2^2$

$= 4$

$f(x) = x^2 - 4x + 4 - 4 + 9$

$f(x) = (x-2)^2 - 4 + 9$

$f(x) = a(x-h)^2 + k$

$f(x) = (x-2)^2 + 5$

h K

$(2, 5)$ $a = +1$

Oct 20-10:08 AM

$f(x) = 2x^2 + 20x + 5$ Partial Factoring

$f(x) = 2(x^2+10x) + 5$

$f(x) = 2(x^2+10x+25-25) + 5$

$f(x) = 2((x+5)^2-25) + 5$

$f(x) = 2(x+5)^2 - 50 + 5$

$f(x) = 2(x+5)^2 - 45$

$(-5, -45)$

$h \quad k$

Mar 26-1:01 PM

Completing the Square

$f(x) = -x^2 + 6x + 7$

Partial factor

$f(x) = -(x^2 - 6x) + 7$

$f(x) = -(x^2 - 6x + 9 - 9) + 7$

$f(x) = -[(x-3)^2 - 9] + 7$

$f(x) = -(x-3)^2 + 9 + 7$

$f(x) = -(x-3)^2 + 16$

Oct 10-10:43 AM

$f(x) = -3x^2 + 6x - 7$

$f(x) = -3(x^2 - 2x) - 7$ $\left(\frac{b}{2}\right)^2$

$f(x) = -3(x^2 - 2x + 1 - 1) - 7$

$f(x) = -3[(x-1)^2 - 1] - 7$

$f(x) = -3(x-1)^2 + 3 - 7$

$f(x) = -3(x-1)^2 - 4$

$(1, -4)$

Mar 10-10:18 AM

$f(x) = -3x^2 + 15x - 2$

$f(x) = -3(x^2 - 5x) - 2$

$f(x) = -3[x^2 - 5x + \frac{25}{4} - \frac{25}{4}] - 2$ $\left(\frac{5}{2}\right)^2 = \frac{25}{4}$ $\frac{5}{2} \times \frac{5}{2}$

$f(x) = -3[(x - \frac{5}{2})^2 - \frac{25}{4}] - 2$

$f(x) = -3(x - \frac{5}{2})^2 + \frac{75}{4} - 2$

$f(x) = -3(x - \frac{5}{2})^2 + \frac{75}{4} - \frac{8}{4}$ $\frac{2}{1} \times \frac{4}{4} = \frac{8}{4}$

$f(x) = -3(x - \frac{5}{2})^2 + \frac{67}{4}$

$(\frac{5}{2}, \frac{67}{4})$

Mar 26-1:07 PM

$f(x) = -2x^2 + 16x - 9$ $\left(\frac{8}{2}\right)^2$ $(4)^2$

$f(x) = -2(x^2 - 8x) - 9$

$f(x) = -2(x^2 - 8x + 16 - 16) - 9$ 16

$f(x) = -2[(x-4)^2 - 16] - 9$

$f(x) = -2(x-4)^2 + 32 - 9$

$f(x) = -2(x-4)^2 + 23$

$(4, 23)$

Oct 18-9:01 AM

$f(x) = -3x^2 + 24x - 12$

$f(x) = -3(x^2 - 8x) - 12$

$f(x) = -3[(x^2 - 8x + 16) - 16] - 12$ $(8/2)^2 = 16$

$f(x) = -3[(x-4)^2 - 16] - 12$

$f(x) = -3(x-4)^2 + 48 - 12$

$f(x) = -3(x-4)^2 + 36$

$(4, 36)$

Mar 26-1:09 PM

Hmk
P 214 q.3,4,6 & 8

$y = (x-3)^2 - 23$

$(3, -23)$

$y = a(x-h)^2 + k$

$(x+4)^2 - 22$

(h, k)

$(-4, -22)$

Mar 26-1:27 PM

$f(x) = -x^2 - 6x - 14$

$f(x) = -1(x^2 + 6x) - 14$

. . .

Mar 10-10:46 AM